

CLAIMS

What is claimed is:

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1. An apparatus for polishing one or more layers of a semiconductor device structure, comprising:

a polishing pad;

a subpad support located adjacent said polishing pad, said subpad support including a subpad retention element; and

a subpad removably secured to said subpad support by way of said subpad retention element, said subpad being located between said subpad support and said polishing pad.

2. The apparatus of claim 1, wherein said polishing pad comprises one of a web format polishing pad and a belt format polishing pad.

3. The apparatus of claim 1, wherein said subpad retention element comprises a clamp configured to retain at least a portion of a periphery of said subpad.

4. The apparatus of claim 1, wherein said subpad retention element comprises negative pressure applicable to a backing of said subpad through said subpad support.

5. The apparatus of claim 1, wherein said subpad retention element mechanically engages a complementary structure on a backing of said subpad.

6. The apparatus of claim 1, further comprising a substantially rigid structure on a backing of said subpad.

7. The apparatus of claim 6, wherein said substantially rigid structure is secured to said backing of said subpad.

8. The apparatus of claim 6, wherein said substantially rigid structure comprises a polymer.

9. The apparatus of claim 6, wherein said substantially rigid structure comprises a metal.

10. The apparatus of claim 6, wherein said substantially rigid structure comprises a dense region of said subpad at said backing thereof.

11. The apparatus of claim 1, wherein said subpad support comprises at least one lip configured to at least partially prevent lateral movement of a subpad assembled with and secured to said subpad support.

12. The apparatus of claim 11, wherein said at least one lip substantially completely laterally surrounds a peripheral edge of said subpad.

13. The apparatus of claim 1, wherein a backing of said subpad is substantially free of adhesive material.

14. The apparatus of claim 1, including a subpad access element.

15. The apparatus of claim 14, wherein said subpad access element is configured to at least partially move said polishing pad away from said subpad support.

16. The apparatus of claim 14, wherein said subpad support access element moves a polishing pad support so as to at least partially move said polishing pad away from said subpad support.

17. A subpad support for use in an apparatus for polishing one or more layers of a semiconductor device structure, comprising a subpad retention element.

18. The subpad support of claim 17, wherein said subpad retention element is configured to removably retain a subpad.

19. The subpad support of claim 17, wherein said retention element mechanically engages a corresponding feature on a backing of a subpad to be assembled with the subpad support.

20. The subpad support of claim 17, wherein said retention element is configured to apply a negative pressure to a backing of a subpad engaged by said retention element.

21. The subpad support of claim 17, wherein said subpad retention element comprises a clamp element configured to engage at least a portion of a periphery of a subpad assembled with the subpad support.

22. The subpad support of claim 17, comprising a lip configured to at least partially prevent lateral movement of a subpad assembled with the subpad support.

23. The subpad support of claim 22, wherein said lip is configured to substantially completely surround a peripheral edge of said subpad.

24. A method for replacing a subpad of an apparatus for polishing one or more layers of a semiconductor device structure, comprising:
moving a polishing pad of the apparatus at least partially away from the subpad;
disengaging a non-adhesive subpad retention element of a subpad support of the apparatus; and
disassembling the subpad from said subpad support.

25. The method of claim 24, wherein said at least partially moving comprises at least partially moving a polishing pad support of the apparatus so as to at least partially move said polishing pad away from the subpad.

5 26. The method of claim 24, wherein said disengaging comprises mechanically disengaging said non-adhesive subpad retention element from a backing of the subpad.

10 27. The method of claim 24, wherein said disengaging comprising disengaging said non-adhesive subpad retention element from at least a portion of a periphery of the subpad.

15 28. The method of claim 24, wherein said disengaging comprises removing from a backing of the subpad a negative pressure applied to said backing through said subpad support.

20 29. The method of claim 24, further comprising assembling another subpad with the subpad support.

30 30. The method of claim 29, further comprising assembling said another subpad to the subpad support with said subpad retention element.

25 31. The method of claim 30, further comprising moving the polishing pad adjacent the subpad.

32. A method for securing a subpad to a subpad support of an apparatus for polishing one or more layers of a semiconductor device structure, comprising:
at least partially moving a polishing pad of the apparatus away from the subpad support;
~~assembling the subpad with the subpad support; and~~

non-adhesively securing the subpad to the subpad support with a subpad retention element of the subpad support.

5 33. The method of claim 32, wherein said at least partially moving said polishing pad is effected without substantially damaging said polishing pad.

34. The method of claim 32, wherein said at least partially moving said polishing pad is effected by at least partially moving a polishing pad support.

10 35. The method of claim 32, wherein said assembling is effected by disposing a substantially rigid base on a backing of the subpad against the subpad support.

15 36. The method of claim 32, wherein said assembling is effected by positioning at least a portion of a periphery of the subpad within a lip protruding from the subpad support.

37. The method of claim 32, wherein said non-adhesively securing comprises at least partially engaging a periphery of the subpad.

20 38. The method of claim 32, wherein said non-adhesively securing comprises mechanically engaging a structure on a backing of the subpad.

39. The method of claim 32, wherein said non-adhesively securing comprises applying a negative pressure to a backing of the subpad through the subpad support.